

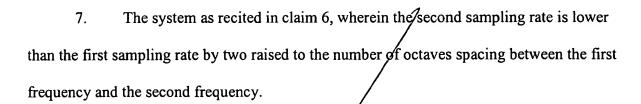
CLAIMS

What is claimed is:

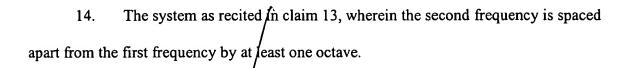
Chb.

A system for processing audio signals, comprising a sequence of digital filters, wherein each filter is configured to process a selected frequency and at least one filter is configured to process more than one frequency.

- 2. The system as recited in claim 1, wherein the at least one filter includes coefficients for processing, and the coefficients are used to process more than one frequency.
- 3. The system as recited in claim 2, wherein the at least one filter is configured to process a first frequency and a second frequency that is at least one interval away from the first frequency.
 - 4. The system as recited in claim 3, wherein the interval is an octave.
- 5. The system as recited in claim 4, wherein the at least one filter is configured to sample the first frequency at a first sampling rate and the second frequency at a second sampling rate.
- 6. The system as recited in claim 5, wherein the second frequency is lower than the first frequency and the second sampling rate is lower than the first sampling rate.

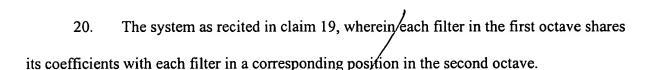


- 8. The system as recited in claim, wherein the sequence of digital filters is configured to process frequencies in a first octave at the first sampling rate.
- 9. The system as recited in claim 8, wherein the sequence of digital filters is further configured to process frequencies in a second octave at the second sampling rate.
- 10. The system as recited in claim 9, wherein each coefficient is represented by fewer than 13 bits.
- 11. The system as recited in claim 10, wherein each coefficient is represented by 12 bits.
- assume to process a selected frequency, wherein each filter includes coefficients for processing and a first filter configured to process a first frequency shares its coefficients with a second filter configured to process a second frequency.
- 13. The system as recited in claim 12, wherein the second frequency is spaced apart from the first frequency by at least one frequency interval.



- 15. The system as regited in claim 14, wherein the first filter is configured to sample the first frequency at a first sampling frequency and the second filter is configured to sample a second frequency at a second sampling frequency.
- 16. The system as recited in claim 15, wherein the second frequency is lower than the first frequency, and the second sampling frequency is lower than the first sampling frequency by a ratio of the first frequency to the second frequency.
- 17. The system as recited in claim 14, wherein the filters are evenly grouped into at least a first and a second octave, the first filter being in the first octave and the second filter being in the second octave.
- 18. The system as recited in claim 17, wherein the filters in the first octave are sampled at a first sampling frequency that is at least twice as high as a highest frequency processed by the first octave.
- 19. The system as recited in claim 18, wherein the second octave is one octave lower than the first octave, and the filters in the second octave are sampled at a second sampling rate that is half as high as the first sampling frequency.





- 21. A method for processing an audio signal, comprising the steps of:
- (a) providing a sequence of digital filters each configured to process a selected frequency;
- (b) providing each filter with coefficients for processing its selected frequency such that a first filter configured to process a first frequency shares its coefficients with a second filter configured to process a second frequency; and
 - (c) applying the audio signal to the sequence of digital filters.
- A computer program product for processing an audio signal, comprising a computer usable medium having machine readable code embodied therein for performing the steps of:
- (a) providing a sequence of digital filters each configured to process a selected frequency;
- (b) providing each filter with coefficients for processing its selected frequency such that a first filter configured to process a first frequency shares its coefficients with a second filter configured to process a second frequency; and
 - (c) applying the audio signal to the sequence of digital filters.

